WIRE SHELF FOR ADJUSTABLE SHELF SYSTEM

CROSS-REFERENCE TO COPENDING PATENT APPLICATIONS

[0001] This is a continuation of serial no. 10/045,447 filed October 21, 2001, now pending.

BACKGROUND OF THE INVENTION

[0002] The present invention is directed to shelving and, more particularly, to wire shelves for adjustable shelf systems.

[0003] Adjustable wire shelf systems are known in the art. As an example, U.S. Patent No. 3,523,508, titled "Adjustable Shelving" and which is incorporated herein by reference, describes an adjustable shelving system in which the wire shelving may be adjusted to various desired heights or assembled and disassembled. The shelves are constructed of criss-crossing wires supported along the periphery by parallel-running, vertically disposed wires joined by a corrugated wire. Welded to the vertically disposed wires, at the corners, are conically shaped post receiving members which taper outwardly toward their lower extremity and receive a respective post and post mounting member. Each post is provided with a plurality of periodically spaced indentations which can accommodate a rib positioned on the inside of the post mounting member so that the post mounting member joins about the post in a holding engagement. The post mounting member also has a conical shape and is adapted to fit snugly within the post receiving members and be engaged within the post receiving member when the post and post mounting member are inserted therein.

[0004] The shelves also include a support wire that is similar to the peripherally located, vertically disposed wires but which runs lengthwise across the shelf at the center. The lower part of the center support wire, however, is much shorter in length than the peripherally located, vertically disposed wires and its ends are positioned far from the peripherally located, vertically disposed wires. The short length of the lower part of the center support wire limits the weight that the shelf may support.

[0005] Another example, U.S. Patent No. 4,629,077, titled "Shelf Support System" and which is also incorporated herein by reference, describes an adjustable shelving system that includes a plurality of grooved support posts and individual pieces of shelving. Each shelf includes a support system at each corner that cooperates with the posts to provide positive support under load conditions. The shelves include a center support formed of a pair of parallel wires which extend along the length of the shelf up to, but not in contact with, other pairs of parallel wires located at the front and rear of each shelf. This arrangement of the center support wires similarly restrict the weight that the shelf may support.

[0006] It is therefore desirable that a wire shelf is provided in which greater weight may be supported.

SUMMARY OF THE INVENTION

[0007] The present invention provides a wire shelf in which side member trusses each include a respective corrugated wire. One of the respective corrugated wires is disposed between upper and said lower wires of one of said side member trusses and

joined to a lower wire of the one of said side member trusses at a plurality of locations and directly to at least some of the undersides of shelf wires. A further one of said respective corrugated wires is disposed between the upper and lower wires of a further one of said side member trusses and joined to said lower wire of the further one of said side member trusses at a plurality of locations and directly to at least some of the undersides of the shelf wires.

[0008] In accordance with an aspect of the invention, a wire shelf includes at least four post supporting members each disposed at a respective corner of the wire shelf. A pair of end members is disposed at opposing ends of the wire shelf. Each of the end members is comprised of a truss having an upper wire and a lower wire. Each of the end members is joined at one end to one of the post receiving members and is joined at another end to another of the post receiving members. The pair of side members is disposed at opposite sides of the wire shelf. Each of the side members is joined at one end to one of the post receiving members that is joined to one of the end members and is joined at another end to another of the post receiving members that is joined to another of the end members. A plurality of wires is disposed atop, and is joined to, a top surface of the side members

[0009] According to a further aspect of the invention, a shelf system includes at least one wire shelf as described above and at least four support posts each inserted into a respective one of the post supporting members of said at least one wire shelf.

[0010] Other features and advantages of the present invention will become apparent from the following detailed description of the invention with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The invention will now be described in greater detail in the following detailed description with reference to the drawings in which:

Figure 1 is a top view of a known wire shelf.

Figure 2 is a top view of a wire shelf in accordance with an embodiment of the invention.

Figure 3 is an end view of portions of the wire shelf of Figure 2.

Figure 4 is a side view of portions of the wire shelf of Figure 2.

Figure 5 is a cross-sectional view along line A-A of a portion of the wire shelf of Figure 2.

DETAILED DESCRIPTION OF THE INVENTION

[0012] Figure 1 shows a known wire shelf arrangement **10**. A plurality of respective support wires **12** extend between a pair of end trusses **14** and provide support for shelf wires (not shown) that are disposed atop the support wires and which extend between a pair of side trusses **16**. Located at each corner is a shelf supporting member **18** which is welded to an end of one of the end trusses and to an end of one of the side trusses.

[0013] Because the shelf wires are only supported by the support wires **12** and by the side trusses **16**, heavy objects that are placed upon the center of the wire shelf may not be supported adequately by the single wire support wires **12** and may cause the shelf wires to sag and, possibly, fail.

[0014] Figure 2 illustrates a wire shelf according to the invention in which one or more of the single support wires **12** shown in figure 1 are replaced with a center support truss which is joined to the end trusses in accordance with the invention.

[0015] The wire shelf **20** is constructed of a plurality of shelf wires 21 which extend from a side truss 26 to a side truss 27. The shelf wires are supported by one or more support wires 22 which extend from one end truss 23 to another end truss 24 and are also supported by one or more center trusses 25. The side trusses 26 and 27 and the end trusses 23 and 24 are each joined at their ends to a respective post support member 28 located at a corner of the shelf.

[0016] Figure 3 shows the structure of the end trusses 23 and 24, as well as the post supporting members 28 in greater detail. The end trusses are constructed of a top wire 32, a bottom wire 34, and a corrugated wire 36 that is welded to the top wire 32 and the bottom wire 34 at various locations. The ends of the top wire 32 and bottom wire 34 are welded to the post supporting members 28. The post supporting members 28 are ring shaped, as Figure 2 shows, but have a conical cross section, as Figure 3 shows. The support wires 22 are each welded at their ends to the top wire 32 of the end trusses.

[0017] Figure 4 illustrates the structure of the side trusses 26 and 27 in greater detail. Each side truss is constructed of a top wire 42 and a bottom wire 44. The plurality of shelf wires 21 are each welded to an underside of a top wire 42. A corrugated wire 46 is disposed between the top wire and the bottom wire and is welded at its bends to the bottom wire 44 and to some or all of the shelf wires 21. The ends of the top wire 42 and the bottom wire 44 are welded to the post supporting members 28.

[0018] Figure 5 shows a portion of a center support truss 25 in greater detail. The center support truss is constructed of a top wire 52, a bottom wire 54, and a corrugated wire 56 that is welded at its bends to various locations of the underside of the top wire 52 and to various locations of the top side of the bottom wire 54. The center support truss 55 supports a plurality of the shelf wires 21 which are each welded to the topside of the upper wire 52.

[0019] In accordance with the invention, the upper wire 52 of the center support truss 25 extends beneath the top wire 32 of each end truss and is welded thereto. Further, the bottom wire 54 of the center support truss includes an extended portion 50 that extends beyond the end of the corrugated wire 56 beneath the bottom wire 34 of each end truss and is welded to the bottom wire 34.

[0020] Thus, by extending the center support trust so that its bottom wire extends beneath and is welded to the end trusses, the wire shelf of the invention is capable of supporting greater weight than known shelf systems. By providing more than one center support truss, the wire shelf of the invention may support even greater weight than with a single center support truss.

[0021] Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses may become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by this specific disclosure herein, but only by the appended claims.